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A REVISION OF THE WEST INDIAN BEETLES OF THE SCARABAEID SUBFAMILY APHODIINAE

By EDWARD A. CHAPIN

THE Aphodiinae form a compact group in the lamellicorn Coleoptera that is considered by some workers to be of family rank. The species have a characteristic habitus and are mostly scavengers in the dung of higher animals. Some are associated with ant colonies, and a few, notably the species of *Saprosites*, appear to feed on the dung of wood-boring insects such as the Passalidae. As a group their distribution is world wide, and the range of some species has come, through the agency of commerce, to coincide with that of the whole. This transfer of species is going on actively at present, and it is only a matter of time before the distribution of the species feeding on dung of domesticated animals will be determined not by natural barriers but by the penetration of human commerce and the adaptability of the species to new climatic conditions. To judge from the fact that *Aphodius lividus* (Olivier) is now generally established from Northern United States to the South Sea Islands and completely around the world in the Tropics and Subtropics, climate will play a minor role among the distributional factors.

There has been active commercial intercourse among the various West Indian Islands and among the islands and many localities on the mainland of the New World for about 300 years. *Aphodius sallei* Harold appears to have been introduced onto certain islands during this period. On the other hand, its distribution at present could be offered as a perfect example to support the land-bridge hypothesis, for it is abundant in Mexico and Central America, common on Jamaica, and frequent on Hispaniola, but apparently absent elsewhere. There-

fore it could be cited as a late migrant coming from Honduras across Jamaica to Hispaniola but too late to continue its way to Cuba.

The classification set forth in this paper is in general along conventional lines. One new taxonomic character, which appears to be of some importance, has been introduced. This relates to the structure of the pygidial segment of the abdomen. In the genus *Aphodius* it will be noticed that the pygidium is more or less uniformly sclerotized from base to apex, with no transverse ridge or carina and without a median longitudinal groove on the basal portion. As a corollary, the apical angles of the elytra are individually rounded, not capable of close approximation and without globular thickenings on the under sides at the angles. In the other genera of the West Indian fauna there is a curious device present that serves to lock the elytra and abdomen together. The pygidium is divided into basal and apical parts, these usually separated by transverse ridge or carina. On the basal part there is a median longitudinal groove of greater or lesser degree of development. The elytra are so constructed that when closed the apical angles are together, and they are so held by virtue of the tongue and groove construction of the sutural edges of the elytra. The apical angles are swollen beneath to form a hemispherical knob that is applied to and slides in the groove on the basal part of the pygidium. In some species the transverse carina of the pygidium is somewhat undercut to accommodate the apical edges of the elytra. This condition is found in many other genera of the Scarabaeidae, as *Choeridium* and *Phanaeus*. It is therefore a secondary modification that has arisen independently in the various groups. But within the Aphodiinae it would appear to be of some value as an indication of the close relation existing between certain tribes. Thus the Aphodiinae and Corythoderini seem to be mutually allied and to a degree separated from the Eupariini, Psammodiini, and Rhyparini.

This revision is the result of a study of more than 6,000 specimens from 20 of the West Indian Islands. The greater part of this material was secured during the years 1935 to 1937 by Dr. and Mrs. R. E. Blackwelder, while Dr. Blackwelder was the holder of the Walter Rathbone Bacon Scholarship of the Smithsonian Institution. To their collections have been added the specimens already in the United States National Museum, smaller lots from St. Croix submitted by H. A. Beatty, from Puerto Rico, collected by the late Stuart T. Danforth, and a fair collection from Jamaica made by the writer in 1937 while associated with Dr. and Mrs. Blackwelder. This probably is a greater mass of material than has been available to any previous worker. Thanks are offered to these and others, notably to G. J. Arrow, of the British Museum, for loan of specimens; to H. E. Hin-

ton, also of the British Museum, for material from his collection and suggestions; and to Dr. P. J. Darlington, of the Museum of Comparative Zoology, for the loan of considerable material from the Greater Antilles.

TABLE 1.—*Distribution of West Indian Aphodiinae*

Island	Aphodius				Pleurophorus parvulus	Psammodius bidens	Saprosites		Ataenius																												
	cuniculus	lividus	salici	quadridentatus			grenadensis	blackwelderi	barclii	steinheili	beattii	abditoides	vincentiae	corrosus	abditus	imbricatus	milanii	tenebrosus	frater	stricticauda	gracilis	eribithorax	darlingtoni	hogaster	jamaicensis	subopacus	elongatus	sulcatus	edwardsi	aculeus	versicolor	insulicola	luteomargo	terminalis	brevinotus	Euparixia bruneri	
Cuba.....	x	x		x	x			x				x		x	x				x	x	x	x	x				x					x	x	x			
Jamaica.....	x	x	x		x					x								x	x	x	x	x		x									x	x	x		
Hispaniola.....	x	x	x									x		x	x		x	x	x	x	x	x											x	x	x		
Puerto Rico.....	x	x				x		x	x			x					x	x	x	x	x	x											x	x	x		
Vieques.....	x	x															x			x																	
St. Thomas.....	x	x								x								x																			
St. John.....	x	x																																			
Tortola.....																		x																			
St. Croix.....	x	x		x						x							x		x	x																	
St. Kitts.....	x	x																x																			
Antigua.....	x	x																																			
Montserrat.....	x	x																																			
Guadeloupe.....	x	x																					x	x													
Dominica.....	x	x			x																																
Martinique.....	x																																				
St. Lucia.....	x									x									x																x		
Barbados.....	x									x						x		x	x	x															x	x	
St. Vincent.....	x				x						x	x						x	x	x																	
Carriacou.....	x																								x												
Grenada.....	x	x			x			x	x								x	x	x	x		x		x		x							x				

KEY TO WEST INDIAN GENERA OF APHODIINAE

1. Pygidium without sharp division into basal and apical parts, apical angles of elytra not thickened..... **Aphodius**
- Pygidium divided into two parts by a more or less distinct transverse carina; basal part furnished with a median longitudinal groove; apical angles of elytra thickened to conform to groove on pygidium..... 2
2. Middle coxa long and oblique, terminating beneath edge of elytral epipleurum..... **Euparixia**
- Middle coxa oval, not touched by elytral epipleurum, prothorax not strongly constricted basally..... 3
3. First segment of hind tarsus as long or nearly as long as three following combined..... 4
- First segment of hind tarsus about as long as two following combined..... 5
4. Front of head coarsely granulate; first segment of hind tarsus triangular; longer spur of hind tibia broad and as long as first three tarsal segments combined..... **Psammodius**

Front of head at most rugose; first segment of hind tarsus slender; longer spur of hind tibia about as long as first tarsal segment-----

Ataenius

5. Elytra margined across base by a carina, which is broken by each stria; humus-dwelling species, often taken on wing at dusk-- Pleurophorus
Elytra not margined across base; species living in dead wood associated with other insects----- Saproscites

Genus APHODIUS Illiger, 1798

Aphodius ILLIGER, 1798, Verzeichniss der Käfer Preussens, p. 15.—CURTIS, 1824, British entomology, vol. 1, No. 27.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 8.

Type of genus: *Scarabaeus fossor* Linnaeus (by subsequent designation of Curtis, 1824).

The genus *Aphodius* was established in 1798 to include 32 species, but without any designation of type species. Curtis, in 1824, selected one of these as type of the genus, choosing the largest of the included species. His action is entirely in accord with the International Rules and must stand. The type designations *Scarabaeus oblongus* Scopoli by Gozis, 1886, and *Scarabaeus erraticus* Linnaeus by Paulian, 1935, are both invalid.

Almost four-fifths of the roughly 700 species of this genus are from the Old World and about half of all the species are Palaearctic in origin. They feed on the excrements of the higher animals.

KEY TO WEST INDIAN SPECIES OF APHODIUS

1. Anterior margin of clypeus with 4 acute teeth, median pair longer than external; Cuba----- 1. *quadridentatus* Harold
Anterior margin of clypeus without acute teeth----- 2
2. Pronotum with a fine but distinct basal margin, surface rather coarsely and densely punctured; elytral striae deep; form robust, length 4-5 mm----- 2. *sallei* Harold
Pronotum without basal margin, surface sparsely punctured, shining----- 3
3. Pale brown with pronotal disk, elytral suture and disks darker; pronotal punctures mostly fine with a few coarse ones at sides. 3. *lividus* Olivier
Piceous with sides of pronotum and elytra and legs slightly paler; pronotal punctures coarse but sparse----- 4. *cuniculus* Chevrolat

1. APHODIUS QUADRIDENTATUS Harold

Aphodius quadridentatus HAROLD, 1861, Berlin. Ent. Zeitschr., vol. 5, p. 107; 1863, loc. cit., vol. 7, p. 331.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 157.

Subconvex, shining, rufopiceous, with sides of pronotum, apices of elytra, and a few small spots on elytra reddish yellow. Head flat, with a low weak swelling at middle, finely punctured, gena angulate and prominent; clypeus anteriorly subtruncate, on each side with the angles produced as small teeth; within these teeth a second pair of

sharper, larger, and forwardly directed teeth, behind which on the clypeus are the two small approximate tubercles. Pronotum somewhat convex, with rounded posterior angles, finely margined at base, rather thickly punctured, the punctures of two sizes mixed. Scutellum elongate oval, free of punctures. Elytra a little widened at middle, at base as wide as pronotum, striae strong, intervals elevated and almost keeled, shining, not distinctly punctured, the outer intervals beginning with the sixth, grooved; rufopiceous with humeri, lateral margins, apices, and a few small flecks on disk and at base reddish yellow. Antennae, palpi, and legs reddish yellow, first segment of hind tarsus as long as the three following taken together. Length: $2\frac{3}{4}$ –3 lines (5.5–6 mm.).

Type.—Possibly in collection of R. Oberthuer, Rennes.

Type locality.—Cuba.

Material examined.—Apparently no additional specimens of this species have been seen since the original lot. If collected again, the species should be easily recognized by the quadridentate clypeus.

2. APHODIUS SALLEI Harold

Aphodius sallei HAROLD, 1863, Berlin. Ent. Zeitschr., vol. 7, pp. 331, 336.—BATES, 1887, Biologia Centrali-Americana, Coleoptera, vol. 2, pt. 2, p. 84, pl. 6, fig. 10.

Aphodius (Bodilus) sallei SCHMIDT, 1913, Arch. Naturg., vol. 79A, fasc. 11, p. 166.

Convex, rufocastaneous, the vertex, disk of pronotum, suture and elytral striae, and metasternum piceous. Head of male with strong median tubercle, of female with tubercle obsolete, anterior margin of clypeus reflexed and subangulate on each side of median depression, surface closely and rather finely punctured. Frons with similar punctures adjacent to clypeofrontal suture, vertex polished and without punctures. Gena rounded, not more prominent than eye. Pronotum convex, sides nearly straight, lateral and basal margins finely beaded, anterior angles slightly produced but blunt, surface rather densely punctured with a mixture of fine and coarse punctures. Scutellum elongate-triangular, sparsely and finely punctured. Elytra together widest at apical third, at base slightly narrower than pronotum, striae coarse, striae punctures large, intervals convex, shining, sparsely and finely punctured. Pygidium with a scalelike ground sculpture, moderately finely and densely punctured, somewhat hairy. Posterior tibia fringed with a row of equal spinules, first segment of posterior tarsus very little shorter than next three segments combined, apical spine about as long as first segment. Length: 4–5 mm.

Type.—Possibly in collection of R. Oberthuer, Rennes.

Type locality.—Mexico.

Material examined.—In addition to a series of specimens from Texas and Mexico, 172 individuals from Jamaica and Hispaniola have been

studied. The species appears to be generally distributed in Jamaica to judge from the collections available. On the other hand, the species is not yet known from the Dominican Republic. All specimens from Hispaniola seen by the author have been taken in Haiti. Dr. R. E. Blackwelder secured series from Morne La Selle, Kenscoff, Trouin, and St. Marc. Three specimens from the Wickham collection are from Port-au-Prince. The distribution of the species suggests that its presence in the West Indian islands is the result of a comparatively recent importation.

3. *APHODIUS LIVIDUS* (Olivier)

Scarabaeus lividus OLIVIER, 1789, Entomologie . . . , Coléoptères, vol. 1, No. 3, p. 86, pl. 26, fig. 222.

Aphodius lividus CREUTZER, 1799, Entomologische Versuche, p. 44, pl. 1, fig. 7a.

Aphodius (Labarrus) lividus MULSANT, 1870, Ann. Soc. Agr. Lyon, ser. 4, vol. 2, p. 516.

Aphodius (Nialus) lividus REITTER, 1892, Verh. Naturf. Ver. Brünn., vol. 30, p. 202.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 316 (see this paper for more extended bibliography, including synonymy).

Aphodius luridus ARROW, 1903, Trans. Ent. Soc. London, p. 511 (*lapsus calami*).

Subconvex, pale yellow-brown, with anterior margin of frons, vertex, disk of pronotum, disks and suture of the elytra, and articulations of legs dark. Head with a low median tubercle on the clypeofrontal suture, clypeus obtusely angulate on each side of the slightly depressed median area, margin finely beaded, gena not produced laterally beyond eye, surface sparsely set with a mixture of large and small punctures. Pronotum with sides gently rounded and narrowly margined, base without marginal line, anterior angles acute but not prolonged, surface with punctation similar to that of head, no ground sculpture visible. Scutellum elongate triangular, with very few punctures. Elytra with striae finely incised, stria punctures fine, intervals flat and extremely finely punctured, the punctures becoming a little coarser on apical declivity. Pygidium rather densely punctured, set with short hairs with a few longer ones intermingled. Hind tibia fringed at apex with equal spinules, first segment of hind tarsus not so long as the next three combined. Length: 3.5–4.5 mm.

Type.—Location unknown to writer.

Type locality.—Environs of Paris, France.

Material examined.—In addition to many hundred specimens from other parts of the world, 380 West Indian specimens of *Aphodius lividus* have been examined by the writer in the course of this study. As the species is already known to have a nearly world-wide distribution, it is sufficient merely to indicate the islands from which specimens have been seen: Cuba, Jamaica, Hispaniola, Puerto Rico, Vieques, St. Thomas, St. John, St. Croix, St. Kitts, Antigua, Montserrat, Guadeloupe, Dominica, and Grenada.

4. *APHODIUS CUNICULUS* Chevrolat

Aphodius cuniculus CHEVROLAT, 1864, Ann. Soc. Ent. France, ser. 4, vol. 4, p. 411.
Aphodius (Nialus) cuniculus SCHMIDT, 1913, Arch. Naturg., vol. 79A, fasc. 11, p. 169.

Convex, rufopiceous with anterior and lateral margins of pronotum, lateral margins and apices of elytra, and legs rufous. Head with three small tubercles on the clypeofrontal suture, the median of which is the largest, clypeus with margin slightly reflexed, obtusely angulate on each side of the median depression, surface finely and rather densely punctured. Frons between eyes punctured as clypeus, vertex polished, without punctures. Gena separated from clypeus by an angular indentation, not more prominent than eye. Pronotum convex, sides gently curved, anterior angles blunt, lateral margins finely beaded, base without marginal line. Surface sparsely but evenly set with a mixture of very fine and very coarse punctures, and without ground sculpture. Scutellum elongate-triangular, without punctures. Elytra with striae rather deep. The strial punctures conspicuous, intervals moderately convex and sparsely set with extremely fine punctures, which become coarser on elytral declivity. Pygidium finely and densely sculptured, sparsely hairy. Hind tibia fringed at apex with row of equal spinules, first segment of hind tarsus shorter than the next three combined. Length: 3-4 mm. (5 mm. according to Chevrolat).

Type.—Location unknown to writer.

Type locality.—Cuba.

Material examined.—In all, 1,945 specimens, plus many broken ones discarded during the progress of the investigation, have been studied. This total comprises material from: Cuba, Jamaica, Hispaniola, Puerto Rico, Vieques, St. Thomas, St. John, St. Croix, St. Kitts, Antigua, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, Barbados, St. Vincent, Carriacou, Grenada, and Tobago.

Genus *PLEUROPHORUS* Mulsant, 1842

Pleurophorus MULSANT, 1842, Histoire naturelle des Coléoptères de France, Lamellicornes, p. 312.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, pp. 469, 488.

Type of genus: *Scarabaeus caesus* Creutzer (by monotypy).

This genus of few species, one of which is becoming world-wide in its distribution, is represented in the West Indies by a single small form. As in *Saprosites*, the first segment of the hind tarsus is short and stout, but it is distinguished from that genus by the broad middle and hind femora as well as by the characters noted in the key. Many specimens of the closely related *P. batesi* (Arrow) have been taken from humus by means of Berlese funnel traps, and it is probable that most of the species of *Pleurophorus* are humus-living organisms.

PLEUROPHORUS PARVULUS (Chevrolat)

Psammodius parvulus CHEVROLAT, 1864, Ann. Soc. Ent. France, ser. 4, vol. 4, p. 415.

Psammobius parvulus ARROW, 1903, Trans. Ent. Soc. London, p. 514.

Diastictus parvulus SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 488.

Dark castaneous, head and all but extreme margins of pronotum piceous. Head strongly convex, gena slightly more prominent than eye and separated from clypeus by a feeble notch, clypeus with a shallow emargination at middle, edge on each side of the emargination reflexed, surface coarsely asperate, the asperities occasionally joining to form transverse ridges, vertex shining, with scattered small punctures. Pronotum with a shallow median groove on posterior half and with a similar transverse groove along anterior margin near each anterior angle. Lateral and basal marginal grooves deep and well defined. Surface shining, sparsely set with a mixture of very coarse and very fine punctures. Scutellum small, elongate, oval, minutely sculptured. Elytra with striae strong and deep, stria punctures not large, intervals convex, sparsely and minutely punctulate. Front femur with posterior face shining and with groove present only along anterior margin. Posterior tarsus shorter than tibia, first segment as long as the next two combined, upper spur very little longer than first segment. Length: 2-2.5 mm.

Type.—Location not known to writer.

Type locality.—Cuba.

Material examined.—In all, 41 specimens of this species have been studied. These come from the islands of Cuba, Jamaica, St. Croix, and Dominica. Most of the specimens seen had been collected at dusk while flying. This bears out the observations recorded by Mr. Arrow in his paper on the St. Vincent and Grenada species. It is probably a humus feeder, as is its close relative on the mainland, *Pleurophorus batesi* Arrow.

Records of this species from the mainland of both Central and North America probably refer to *P. batesi* Arrow and not to *P. parvulus* Chevrolat. The writer has examined more than a hundred North American specimens, all of which agree with the Mexican rather than the West Indian species.

After a study of the type species of the genera *Pleurophorus* and *Diastictus*, it appears that both *P. parvulus* and *P. batesi* must be associated with *Pleurophorus caesus* (Creutzer) rather than with *Diastictus vulneratus* (Sturm) if these genera are maintained as distinct. Since the two are separated only by the difference in the relative length of the posterior tibial spur and relative length of posterior tarsus to tibia, characters of no fundamental importance, it would be best to merge the two under one name.

Genus PSAMMODIUS Fallén, 1807

Psammodius FALLÉN, 1807, *Observationes entomologicae*, fasc. 3, p. 37.—GYLLENHAL, 1808, *Insecta Suecica* . . . , Coleoptera, vol. 1, pt. 1, p. 6.—CURTIS, 1829, *British entomology*, vol. 6, No. 258.—HEER, 1841, *Fauna coleopterorum Helvetica*, vol. 1, fasc. 3, p. 532.

Psammobius HEER, 1841, *Fauna coleopterorum Helvetica*, vol. 1, fasc. 3, p. 531.

Type of genus: *Aphodius sulcicollis* Illiger (by subsequent designation of Curtis, 1829).

This genus, usually credited to Gyllenhal, 1808, was originally proposed by Fallén in the previous year. The originally included species were seven in number as follows: *Scarabaeus arenarius* Paykull, *Aphodius globosus* Illiger, *A. elevatus* Fallén, *A. sabuleti* Fallén, *A. porcatus* Fallén, *A. asper* Fallén, and *A. sulcicollis* Illiger. Curtis, 1829, choosing to preserve the name *Psammodius* free of conflict with *Aegialia* Latreille, 1807, selected the last species, *A. sulcicollis* Illiger, as type. This action is strictly in accord with the International Rules and must be accepted. There was therefore no cause for Heer, 1841, to shift the type from *A. sulcicollis* Illiger to *A. sabuleti* Fallén, thereby killing the name as a subjective synonym of *Aegialia*, and to propose a new name, *Psammobius*, to include *A. sulcicollis* Illiger.

The genus is included in the West Indian fauna by virtue of a single specimen from Puerto Rico. It is possible that this represents a recent importation from North America.

PSAMMODIUS BIDENS Horn

Psammodius bidens HORN, 1871, *Trans. Amer. Ent. Soc.*, vol. 3, p. 293; 1887, loc. cit., vol. 14, p. 92.

Psammobius cruentus SCHMIDT, 1922, *Das Tierreich*, pars 45, Aphodiinae, p. 478 (incorrect synonymy).

Dark castaneous above, head and pronotum slightly paler, underparts bright rufous. Anterior margin of head with a sharp triangular tooth each side of the median shallow emargination, sides of head gradually and evenly rounded to the genal lobes. Front coarsely and rather densely verrucose, vertex polished and very finely and very sparsely punctate. Pronotum strongly convex, with fine, short marginal setae, marginal groove fine, replaced across base by a series of coarse punctures. Surface shining, ornamented with punctures of two distinct sizes: The entire surface evenly, sparsely, and very finely punctured, and in addition the disk is sparsely set with rather coarse punctures. No trace of basal transverse impression, but each anterior angle with a short, deep, strongly punctured groove. Elytral striae deep, striae punctures coarse and well defined, intervals slightly convex, very finely and irregularly punctured. Lateral margin blunt,

epipleura dull. Pygidial carina feeble, median cusp strong. Lateral areas of metasternum finely sculptured, median area and that portion of lateral area adjacent to posterior coxa shining, very finely and sparsely punctured, median groove deep and fine, not abruptly terminated either anteriorly or posteriorly. Abdominal sternites feebly verrucose laterally, median areas smooth, basal transverse rows of pits fine but sharply defined. Anterior femur with ill-defined groove along anterior margin, surface shining, sparsely punctured near posterior margin. Posterior femur strongly inflated, without marginal groove, surface shining, sparsely and minutely punctured, with three or four coarse punctures near the insertion of tibia. Middle and posterior tibiae each with one well-defined transverse ridge and with traces of two others above. Longer apical spur of posterior tibia broad, twisted, and as long as the first three tarsal segments combined. Length: 3-4 mm.

Type.—In the Academy of Natural Sciences, Philadelphia.

Type locality.—Southern United States, probably Georgia.

Material examined.—Many specimens from Southeastern United States and one specimen taken on beach at Humacao, Puerto Rico, October 8, 1935, Blackwelder station 56.

The writer does not accept the synonymy of Horn's species with *P. cruentus* (Harold) of the Argentine. It is evident from Schmidt's 1922 paper that he had not seen a specimen of the true *P. bidens* (Horn). The transverse ridges on the middle and hind tibiae are well marked, and the species runs in Schmidt's key to *P. ambiguus* Fall and Cockerell, from which it is easily distinguished.

Genus *SAPROSITES* Redtenbacher, 1858

Saprosites REDTENBACHER, 1858, Fauna Austriaca, ed. 2, p. 436.—BATES, 1887, Biologia Centrali-Americana, Coleoptera, vol. 2, pt. 2, p. 92.—REITTER, 1892, Verh. Naturf. Ver., Brünn., vol. 30, pp. 157, 169.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, pp. 389, 398.

Type of genus: *Saprosites peregrinus* Redtenbacher, 1858 (by monotypy).

In habitus the species of this genus closely resemble certain *Ataenius*, such as *A. gracilis* (Melsheimer). They are easily distinguished by the shorter and stouter tarsi and by the short but clearly defined transverse ridges on the middle and hind tibiae. Most of the species are found in the warmer parts of the world but a few occur in the Palaearctic and Nearctic regions. In the Western Hemisphere, a species, *S. ventralis* (Horn), has long been listed in the genus *Pleurophorus* but is a true and quite typical *Saprosites*. One collection of this species was made by H. S. Barber at Marlboro, Md., in the galleries of *Popilius disjunctus* (Illiger), where it

may have been feeding on the frass pellets. In other cases, species have been recorded as collected under bark. As yet but two species of this genus have been found in the West Indies. These may be separated as follows:

1. Abdominal sternites very thickly and finely punctured; anterior tibia with denticle between upper two of the three major teeth; length 4 mm.-----1. *grenadensis* Arrow
- Abdominal sternites moderately thickly and coarsely punctured; anterior tibia without denticle between upper two of the major teeth; length 3 mm.-----2. *blackwelderi*, new species

1. *SAPROSITES GRENADENSIS* Arrow

Saprosites grenadensis ARROW, 1903, Trans. Ent. Soc. London, p. 514.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 412.

Related to *S. parallelus* Harold but smaller and with finer punctuation. Rufopiceous, with head and pronotum more definitely red. Pronotum simply but irregularly punctate, elytra deeply striate, the striae punctures not very distinct. Metasternum broadly canaliculate, abdominal segments densely and finely punctured. Anterior tibia with three major teeth, with a minute tooth between the upper two of the three. Length: 4 mm.

Type.—In the British Museum.

Type locality.—Grenada, Grand Étang (1,900 feet).

Material examined.—The writer has not seen any specimens of this species. The description has been taken from the original publication.

2. *SAPROSITES BLACKWELDERI*, new species

Moderately convex-cylindrical, pronotum slightly wider than elytra at base; castaneous with margins of pronotum and elytra darker. Head convex, clypeus with broad, shallow emargination at middle, surface near the strongly beaded edge asperate, remaining surface moderately densely but not very finely punctured, genal lobe small but more prominent than eye. Pronotum slightly wider than long, nearly quadrate, surface sculpture similar to that of head, lateral margins finely beaded, base not margined, anterior angles nearly right, posterior angles very broadly rounded. Scutellum elongate, small, without punctures. Elytra deeply striate, striae punctures moderately coarse, intervals finely and rather densely punctured, humeral angles strongly denticulate. Pygidium with broad, deep, and sharply defined median groove on basal half, which is minutely punctulate, apical half shining and rather coarsely punctured, transverse carina feebly indicated. Abdomen with sternites fused but with transverse sutures plainly indicated, coarsely and moderately densely punctured. Front femur with marginal groove at anterior margin of posterior face only, tibia

with three large teeth, the upper two of which are close together without an intercalated denticle, middle and hind tibiae each with a trace of an oblique ridge, tarsi short and stout, claws very small. Length: 3 mm.

Type and paratypes.—U.S.N.M. No. 53319.

Type locality.—Mayaguez, Puerto Rico.

Material examined.—Three specimens taken at the type locality on January 6, 1937 (Blackwelder station 358); one specimen from Añasco, Puerto Rico, October 25, 1935, by R. G. Oakley (San Juan No. 6369). All specimens were taken in rotting wood.

Genus ATAENIUS Harold, 1867

Ataenius HAROLD, 1867, Coleopterologische Hefte, vol. 1, p. 82; vol. 2, p. 100.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 413.

Type of genus: *Ataenius scutellaris* Harold, 1867 (by monotypy).

While this genus is usually cited as from page 100 of the second part of the Coleopterologische Hefte, it was actually established on page 82 of the first part. Fortunately there appears no conflict in usage in the two places. An earlier name, *Auperia* Duval, is not available as it is an intended emendation of *Euparia* Lepeletier and Serville and therefore takes the same type as that genus.

The species of *Ataenius* are mostly inhabitants of the Tropics or the Southern Hemisphere. A few are found in North America and a very few enter the Palaearctic region. The habits of the various species are somewhat diverse, some being attracted to the excrements of higher animals and some living beneath vegetable debris.

KEY TO WEST INDIAN SPECIES OF ATAENIUS

1. Pygidium without acute transverse carina, apical portion convex and polished; clypeal margin in fresh specimens obtusely denticulate each side of median emargination; integuments strongly shining; femora, metasternum, and abdominal sternites impunctate.....1. *haroldi* Steinhilber
- Transverse carina acutely raised, joined at ends to marginal carina; apical portion (enclosed by these carinae) concave and strongly alutaceous.....2
2. Clypeal margin distinctly denticulate each side of median emargination; integuments dull.....3
- Clypeal margin broadly rounded each side of median emargination.....8
3. Posterior femur with a deep groove extending along entire posterior margin.....4
- Posterior femur without groove or with feeble groove near insertion of tibia.....5
4. Punctures on frons nearly uniform in size; punctures on pronotum moderately coarse, neither crowded nor confluent.....2. *steinheili* Harold

- Punctures on frons coarse near eyes, becoming exceedingly fine toward anterior margin; punctures on pronotum very coarse, crowded and subconfluent at base-----3. *beattyi*, new species
5. Front of head except adjacent to clypeal margin rather closely set with coarse, elongate punctures; extreme marginal area transversely rugulose; discal elytral intervals nearly flat, each with a series of punctures-----4. *abditoides*, new species
- Front of head near eyes sparsely to densely set with round punctures, lower (anterior) portion irregularly and rather coarsely rugulos-----6
6. Elytral intervals on disk carinate, each carina broken into a series of shining points; pronotum with a very shallow longitudinal groove reaching from point just before the scutellum to about half length of pronotum-----5. *vincentiae* Arrow
- Elytral intervals on disk flat or convex, not carinate; pronotum without trace of median longitudinal groove-----7
7. Pronotum swollen posterolaterally so as to overhang the posterolateral margin; discal punctures very coarse, mostly separated by less than their diameters; punctures on intervals of elytra coarse-----6. *corrosus*, new species
- Pronotum normal, not overhanging margin at any point; discal punctures coarse, mostly separated by more than their diameters; punctures on intervals of elytra fine-----7. *abditus* (Haldeman)
8. Pronotum unusually short, hardly more than one-third as long as elytra; anterior femur thin, oblong, with fine marginal groove; posterior femur slender-----27. *brevinotus*, new species
- Pronotum normal, almost half as long as elytra; femora normal for genus-----9
9. Anterior femur beneath without marginal groove-----26. *terminalis* (Chevrolat)
- Anterior femur beneath grooved at least along anterior margin-----10
10. Posterior femur with groove along posterior margin, which may reach the entire length of femur or which may be present only in its apical portion-----11
- Posterior femur without groove along posterior margin-----19
11. Upper surface opaque, elytral punctures set with minute setae; posterior femur with entire groove-----12
- Upper surface shining, elytral punctures mostly without setae; posterior femur with groove usually abbreviated-----14
12. Setae on elytra suberect, conspicuous; pronotal punctures very coarse, tending to coalesce at sides-----8. *imbricatus* (Melsheimer)
- Setae on elytra closely appressed, not visible except with high magnification; pronotal punctures less coarse, discrete-----13
13. Elytral intervals subcarinate, scutellum broader at base than long, punctures on intervals near scutellum moderately coarse.
9. *miamii* Cartwright
- Elytral intervals flat, scutellum longer than width at base, punctures on intervals near scutellum exceedingly fine-----10. *tenebrosus* Arrow
14. Posterior femoral groove reaching nearly to insertion of femur; outer elytral interval (adjacent to lateral margin) opaque-----20. *frater* Arrow
- Posterior femoral groove abbreviated, only on apical half of femur; outer elytral interval not noticeably different from others-----15

15. Metasternum near middle trochanters with a cluster of very coarse punctures, which are not a continuation of lateral sculpture-----19. *strigicauda* Bates
Metasternum evenly and sparsely punctured on median area, without such a cluster of very coarse punctures-----16
16. Form slender; pronotum with a shallow median longitudinal groove on basal half; median portion of metasternum moderately coarsely punctured-----12. *gracilis* (Melsheimer)
Form robust; pronotum without median groove; median portion of metasternum very finely punctured-----17
17. Metasternum except for median portion and a narrow area adjacent to posterior coxae finely to coarsely sculptured; anterior femur beneath coarsely and sparsely punctured----16. *cribrithorax* Bates
Metasternum finely and densely sculptured near extreme lateral margin only; anterior femur with a few coarse punctures near posterior apical margin-----18
18. Size large, length more than 4.5 mm; ninth elytral interval (sutural=first) densely punctulate, tenth interval impunctate.
18. *darlingtoni* Hinton
Size small, length less than 4.5 mm; ninth interval not noticeably more densely punctate than tenth-----17. *liogaster* Bates
19. Pronotal punctures in any area more or less uniform in size; that is, at no place is there a mixture of coarse and very fine punctures -----20
Pronotum with coarse punctures densely or sparsely placed, always with an admixture of very fine punctures scattered between coarse ones-----22
20. Elytra bicolored, sutural to fifth and seventh intervals piceous on disk, sixth and eighth to tenth intervals and apex broadly luteous; pronotal punctures coarse-----21. *jamaicensis*, new species
Elytra uniform piceous to black-----21
21. Luster subopaque, elytral intervals moderately coarsely punctured, pronotal punctures coarse, length up to 4 mm.
11. *subopacus*, new species
Luster shining, elytral intervals very finely punctured, pronotum strongly transverse, finely and densely punctured, length 5 mm or more-----13. *elongatus* (Palisot)
22. Metasternum with small patch of setigerous punctures-----23
Metasternum without setae-----24
23. Setae confined to anterior half of median area of metasternum; pronotum not strongly convex from side to side, its marginal setae unusually long-----25. *sulcatulus* (Chevrolat) (♂)
Setae confined to posterior half of median area of metasternum; pronotum normally convex, its marginal setae not unusually long-----14. *edwardsi*, new species
24. Lateral intervals and apices of elytra conspicuously setose-----25
Lateral intervals and apices of elytra with at most a few minute setae, visible only with high magnification-----26
25. Middle femur with deep and entire marginal groove; middle and posterior femora coarsely punctured in apical half-----22. *aciculus* Hinton
Middle femur without marginal groove; middle and posterior femora finely and sparsely punctured-----23. *versicolor* Schmidt

26. Posterior femur without fringe of long setae along basal half of inner anterior margin; sides of pronotum coarsely and densely punctured, punctures separated by less than their own diameters-----15. *insulicola*, new species
 Posterior femur with such a fringe; sides of pronotum sparsely punctured, punctures separated usually by more than twice their diameters-----27
27. Elytra usually (always?) bicolored, apices and outer intervals pale; vertex densely punctured-----24. *luteomargo*, new species
 Elytra uniform piceous; vertex sparsely punctured.
 25. *sulcatulus* (Chevrolat) (♀)

1. *ATAENIUS HAROLDI* Steinheil

Ataenius haroldi STEINHEIL, 1872, Atti Soc. Ital. Sci. Nat., vol. 15, p. 556.

Ataenius figurator HAROLD, 1874, Coleopterologische Hefte, vol. 12, p. 24.—BATES, 1887, Biologia Centrali-Americana, Coleoptera, vol. 2, pt. 2, p. 99.—HORN, 1887, Trans. Amer. Ent. Soc., vol. 14, p. 79.—SCHMIDT, 1922, Das Tierreich, pars 45, p. 435.

Piceous, strongly shining, sides of pronotum, underparts of thorax, and legs bright castaneous, trophi and antennae pale. Anterior margin of head with a small denticle (in fresh specimens) each side of the slight median emargination. Front sparsely and finely punctured, its anterior two-thirds rather coarsely and transversely rugulose, vertex more coarsely and densely punctured. Pronotum apparently devoid of marginal setae, margin evenly curved from middle point of base to broadly rounded anterior angles, marginal groove fine and complete. Surface highly polished, set with punctures of two sizes—very fine ones, which are evenly but not densely distributed, and a few very coarse ones, which are more abundant laterally. Elytral striae rather fine but deep, striae punctures well marked, intervals smooth and flat, not subcarinate at apex, each sparsely set with very minute punctures. Lateral margin low and blunt, epipleura shining. Pygidium with the usual separation into a basal, longitudinally grooved portion and an apical portion but with the dividing line not carinate, apical portion convex and shining, minutely punctulate. Mesosternum and sides of metasternum shagreened, median portion of latter, abdominal sternites and legs virtually impunctate. Basal transverse row of pits on each sternite fine but distinct. Anterior femur with trace of marginal groove only on anterior margin near insertion of tibia, posterior femur without marginal groove, posterior tibia without accessory spine. Length: 3-4 mm.

Type.—Location unknown to writer.

Type locality.—San Luis, Argentina (*haroldi*); Louisiana, U. S. A. (*figurator*).

Material examined.—Eighteen specimens of West Indian origin as well as many from Louisiana and other parts of North America and series from Mexico and Argentina. Of the 18, four are from Cuba, seven from Hispaniola (La Moriniere, Haiti), and seven from Puerto Rico.

There seems little doubt that this species is identical with *A. haroldi* Steinheil, 1872, notwithstanding the fact that Schmidt (1922) maintains the two as distinct. In the original description, Harold states that *figurator* can be separated from *haroldi* only by the absence of clypeal teeth. Certainly clypeal denticles are present in fresh specimens of *figurator* from the type locality. This fact was pointed out by Horn and Bates and is substantiated by the present investigations. The species is immediately recognized by the convex and polished apical half of the pygidium.

2. *ATAENIUS STEINHEILI* Harold

Ataenius steinheili HAROLD, 1874, Coleopterologische Hefte, vol. 12, p. 18.

Piceous-black when clean but usually covered with an incrustation so as to appear gray, legs and trophi castaneous. Anterior margin of head rather strongly denticulate each side of shallow median emargination. Front rather coarsely and closely set with round punctures except for the marginal area, which is polished, vertex more coarsely punctured. Pronotum with marginal setae short, marginal groove complete but not conspicuous. Surface evenly and rather densely set with punctures which are less coarse and are crowded as the median area is approached. Hind angles obliterated by shallow emargination. Elytra with broad and deep striae, stria punctures conspicuous, intervals subacutely carinate except outer one where carina is replaced by a few polished points, each carina with an irregular double row of rather fine punctures and bordered each side by fine grooves. Lateral margin acute, epipleura opaque. Pygidial carina with feeble median cusp. Mesosternum rough, as are the sides of the metasternum. Median area of latter shining, strongly punctured, median groove conspicuous but not abruptly terminated. Abdominal sternites strongly and rather coarsely punctured, transverse basal row of pits on each sternite well defined, these pits especially deep and elongate on last two sternites. Anterior femur beneath with deep perimarginal groove, the surface densely and coarsely punctured. Posterior femur slender, shining, with groove on posterior margin, surface more finely and sparsely punctured; posterior tibia with accessory spine. Length: 4–4.5 mm.

Type.—Possibly in collection of R. Oberthuer.

Type locality.—New Granada (Colombia) between Baranquilla and Mompo, on the Magdalena River.

Material examined.—Thirty specimens from Grenada, taken January 10, 1936, in cow dung 2 miles west of Grand Anse on the peninsula of Point Saline (Blackwelder station 131). I have also studied a single specimen from Port of Spain, Trinidad, November 24, 1935 (Blackwelder station 94) and one from General Ballivian, Prov. Salta, Argentina, collected by Dr. G. L. Harrington.

3. *ATAENIUS BEATTYI*, new species

Sooty black, anterior margins of head and pronotum and legs castaneous, antennae and trophi paler. Anterior margin of head denticulate each side of the broad and shallow median emargination. Front rather coarsely punctured near eyes, the punctures becoming very fine toward the median anterior area, marginal area polished and free of punctures, vertex very coarsely and confluent punctured. Pronotum with marginal setae short and stout, marginal groove complete but evanescent at anterior angles. Surface coarsely, cribrately, and subconfluent punctured, the punctures slightly smaller toward the anterior margin. Hind angles shallowly emarginate. Elytra with broad and deep striae, strial punctures coarse and conspicuous, intervals subacutely carinate except outer one, which is very deeply set, plane, and strongly alutaceous, each carina with an irregular double row of fine punctures but not bordered by distinct grooves. Lateral margin acute, epipleura opaque. Pygidial carina with a strong median cusp, which is sometimes continued across the face of the pygidium as a fine carina. Sides of metasternum very rough, median area somewhat shining, coarsely and densely punctured, median groove deep, abruptly terminated behind. Abdominal sternites very coarsely and rugosely punctured, transverse basal rows of pits on each sternite well defined, these pits especially deep and elongate on last two sternites. Anterior femur with perimarginal groove, the surface coarsely and rugosely sculptured. Posterior femur somewhat shining, with posterior marginal groove complete, surface more finely but rather densely punctured; posterior tibia with accessory spine. Length: 3.5–4 mm.

Type and paratypes.—U.S.N.M. No. 53320.

Type locality.—St. Croix, Virgin Islands.

Material examined.—Six specimens from St. Croix, five of which were taken in dung November 29, 1936, by H. A. Beatty and R. E. Blackwelder (Blackwelder station 339); 38 specimens from Constant Spring, Jamaica, April 1931; one from St. Thomas, Virgin Islands, October 21, 1935 (Blackwelder station 68), and one from Barbados, March 12, 1936 (Blackwelder station 195).

4. ATAENIUS ABDITOIDES, new species

? *Ataenius exoratus* FLEUTIAUX and SALLÉ, 1889, Ann. Soc. Ent. France, ser. 6, vol. 9, p. 397.

? *Ataenius polyglyptus* var. *jalapensis* ARROW, 1903, Trans. Ent. Soc. London, p. 513 (not Bates).

Piceous-black, apices of tibiae, tarsi, and trophi paler. Anterior margin of head moderately strongly denticulate each side of shallow median emargination. Front rather densely set with elongate oblong punctures except for the median area adjacent to the emargination where the surface is coarsely granulate; vertex densely set with coarse round punctures. Pronotum broadly and evenly rounded from center point on base to point above eye, marginal setae inconspicuous, marginal groove entire but fine. Surface densely, evenly, and coarsely punctured. Elytral striae not coarse, strial punctures well defined, intervals flat on disk becoming subacutely carinate near apex, each with a single row of moderately coarse punctures, surface strongly alutaceous. Lateral margin subacutely cariniform, epipleura opaque. Pygidial carina with a well-defined median cusp. Mesosternum and lateral portions of metasternum shagreened, median area of latter strongly shining, coarsely and rather densely punctured. Median groove deep, abruptly terminated behind. Abdominal sternites with punctures similar to those on the median area of metasternum. Transverse basal rows of pits poorly defined. Anterior femur with perimarginal groove, the surface roughly sculptured but without clearly defined punctures. Posterior femur with short marginal line near insertion of tibia, surface shining, sparsely set with well-defined punctures; posterior tibia without accessory spine. Length: 4 mm.

Type and paratypes.—U.S.N.M. No. 53321.

Type locality.—St. Lucia, British West Indies.

Material examined.—Six specimens from St. Lucia, three of which were taken under trash on bank of Milette River near junction with Roseau River, April 3, 1936 (Blackwelder station 211) and three from nearby on the Roseau River, April 1936 (Blackwelder station 209). One specimen from St. Vincent, 6 miles north of Kingstown, February 15, 1936 (Blackwelder station 176), and two from Tacarigua, Trinidad, December 22, 1935 (Blackwelder station 107).

The identity of *A. exoratus* Fleutiaux and Sallé with this species is far from certain. The short description of *exoratus* is not sufficient to separate *abditoides* from *subopacus*, described later in this paper. It is probable that one or the other should be called *exoratus*. It may also be the species recorded from Grenada and St. Vincent by Arrow (1903) as *A. polyglyptus* var. *jalapensis* Bates. The writer has been able to examine a specimen of this last from the British Museum and finds it to be the same as *A. abditus* Haldeman. The sculpture of the heads of these two species is quite different.

5. *ATAENIUS VINCENTIAE* Arrow

Ataenius vincentiae ARROW, 1903, Trans. Ent. Soc. London, p. 513.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 450.

Piceous-black, not shining, legs castaneous, antennae and trophi paler. Anterior margin of head denticulate each side of very shallow median emargination. Front near eyes densely and finely punctured, more than anterior half coarsely and irregularly rugose, vertex moderately coarsely and densely punctured. Pronotum with marginal setae very inconspicuous, marginal grooves complete but ill defined. Surface very densely and evenly punctured, the punctures slightly more coarse than those on vertex. Elytral striae rather fine but clearly defined, stria punctures evident but not conspicuous, intervals flat but each with the median line acutely carinate, each carina broken into a series of oblong points and with each break furnished with a minute seta. Surface otherwise coarsely alutaceous. Lateral margin acute, epipleura dull. Pygidial carina with a strong median cusp. Mesosternum and lateral areas of metasternum shagreened, median area of latter shining, coarsely and not densely punctured, median groove terminated abruptly anteriorly. Abdominal sternites moderately coarsely and rather densely punctured, basal transverse rows of pits poorly defined except on terminal sternite. Anterior femur with deep marginal groove on anterior margin, surface coarsely and rugosely punctured. Posterior femur with trace of marginal groove near insertion of tibia, surface shining, sparsely and not coarsely punctured; posterior tibia without apical spine. Length: 3.3–3.5 mm.

Type.—In the British Museum.

Type locality.—St. Vincent, British West Indies.

Material examined.—A specimen from the type series by courtesy of G. J. Arrow. Also two specimens from St. Vincent, February 10, 1936, R. E. Blackwelder (station 170), one specimen from 25 km. (by road) south of Puerto Plata, Dominican Republic, June 1938, P. J. Darlington, one specimen from Coamo Springs, Puerto Rico, Dec. 27, 1914, and two specimens from Coamo, Puerto Rico, March 24, 1929, S. T. Danforth. There is also a specimen from La Ceiba, El Salvador, Vera Wellborn, in the National Collection.

6. *ATAENIUS CORROSUS*, new species

Piceous, feebly shining, anterior margins of head and pronotum and legs castaneous, antennae and trophi pale. Anterior margin of head denticulate each side of shallow median emargination. Front and vertex densely and moderately coarsely punctured, the punctures becoming finer anteriorly, region adjacent to anterior margin coarsely and irregularly rugulose and free of punctures. Pronotum with marginal setae inconspicuous and with marginal groove very broad and

deep. Side portions of pronotum strongly swollen, from anterior angles to points directly above the origins of the third elytral striae, so that, as seen from above, the posterolateral margin is concealed. Surface moderately densely and very coarsely punctured; in general, each puncture is separated from its nearest neighbor by less than its diameter. Elytral striae coarse and deep, strial punctures coarse and slightly off center, so that they encroach on the inner margin of each interval. Intervals subconvex, alutaceous, each with a single row of moderately coarse punctures along its outer margin. Lateral margin subacute, epipleura subopaque and coarsely punctured. Pygidial carina with a moderately strong median cusp. Metasternum laterally opaque, finely and densely sculptured, median area shining, coarsely and sparsely punctured, median groove deep, abruptly terminated both anteriorly and posteriorly. Abdominal sternites coarsely and sparsely punctured, basal transverse rows of pits sharply defined. Anterior femur with perimarginal groove, surface coarsely and densely punctured. Posterior femur with trace of marginal groove near insertion of tibia, surface shining, moderately coarsely and sparsely punctured; posterior tibia without accessory spine. Length: 3.5 mm.

Type and paratype.—Museum of Comparative Zoology No. 23555. Paratype: U.S.N.M. No. 53322.

Type locality.—Aguadores, Prov. Oriente, Cuba.

Material examined.—Type and two paratypes from the above locality, June 6, 1936, Dr. P. J. Darlington, Jr.

7. *ATAENIUS ABDITUS* (Haldeman)

Aphodius (*Oxyomus*) *abditus* HALDEMAN, 1848, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 1, p. 106.

Ataenius abditus GEMMINGER and HAROLD, 1869, Catalogus coleopterorum . . . , vol. 4, p. 1066.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 449.

Piceous to black, anterior margin of head and pronotum and legs castaneous, antennae and trophi paler. Anterior margin of head finely denticulate each side of shallow median emargination, lateral margin nearly straight from denticles to genae. Front and vertex moderately coarsely and rather densely punctured, the punctures becoming finer anteriorly, extreme anterior margin feebly rugose and free from punctures. Pronotum with marginal setae short and inconspicuous, marginal groove moderately fine across base, broader laterally. Surface shining, coarsely and rather densely punctured, the punctures rather sparse on disk and slightly finer anteriorly. Elytral striae moderately fine and deep, strial punctures rather coarse and off center, encroaching on the inner margin of each interval. Intervals nearly flat, finely alutaceous, each with a single row of fine punctures along its outer margin. Lateral margin acute, epipleura

subopaque and irregularly sculptured. Pygidial carina with a moderately strong median cusp. Metasternum opaque and finely sculptured laterally, median area shining, coarsely and rather sparsely punctured, median groove deep, abruptly terminated anteriorly and posteriorly. Abdominal sternites coarsely and sparsely punctured, basal transverse rows of pits clearly defined. Anterior femur with strong anterior marginal groove, surface rather coarsely and densely punctured. Posterior femur with short marginal groove near insertion of tibia, surface shining, rather finely and sparsely punctured; posterior tibia without accessory spine. Length: 3.5 mm.

Type.—Probably at Museum of Comparative Zoology.

Type locality.—"Middle States," presumably near Pennsylvania.

Material examined.—In addition to several hundred specimens from the mainland of North America, a series of 20 specimens from Ennery, Haiti, near 1,000 feet, September 5–11, 1934, P. J. Darlington, and a single specimen from Camp Perrin, Haiti, near 1,000 feet, October 8–27, 1934, Darlington, have been studied.

There is some variation in this species as regards the punctation of the front in the North American series, the punctures apparently becoming progressively finer the farther west the specimen is collected. The Haiti series agrees closely with the northeastern representatives.

8. *ATAENIUS IMBRICATUS* (Melsheimer)

Aphodius imbricatus MELSHEIMER, 1844, Proc. Acad. Nat. Sci. Philadelphia, new ser., vol. 2, p. 136.

Ataenius imbricatus GEMMINGER and HAROLD, 1869, Catalogus coleopterorum, vol. 4, p. 1066.—HORN, 1871, Trans. Amer. Ent. Soc., vol. 4, p. 285; 1887, loc. cit., vol. 14, p. 74.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 443.

Ataenius sordidus HAROLD, 1869, Coleopterologische Hefte, vol. 5, p. 103.

Piceous-black but almost always covered with a gray incrustation, legs, antennae, and trophi paler. Anterior margin of head broadly rounded each side of median emargination, front coarsely reticulate-punctate but becoming simply punctate and finally smooth toward margin, the punctures tending to form longitudinal rows laterally, vertex even more coarsely reticulate than upper part of front, each reticulation on front giving rise to a short stout seta. Pronotum with marginal setae, marginal groove present at sides but absent across middle portion of base. Surface coarsely and closely punctured, except along median line near base where punctures are more sparse, each puncture bearing a short seta. Elytral striae deep but poorly defined, stria punctures not evident, intervals evenly convex, not carinate, each with a few irregularly placed short setae. Lateral margin subacutely carinate, epipleura opaque. Pygidial carina with a strong median cusp. Mesosternum, side portions of metasternum

and of abdominal sternites roughly sculptured, median portions of metasternum and abdominal sternites somewhat shining, shallowly rugose-punctate. Median groove of metasternum poorly defined. Anterior femur with a poorly defined groove on anterior margin, surface roughly sculptured. Posterior femur with a broad, poorly defined groove along almost the entire length of the posterior margin; posterior tibia without accessory spine. Length: 3.5–4 mm.

Type.—Possibly at Museum of Comparative Zoology.

Type locality.—Pennsylvania, U. S. A. (*imbricatus*); Texas to Ega (*sordidus*).

Material examined.—In addition to about 50 specimens from Pennsylvania and other parts of North America, the writer has studied a series of 142 specimens from Baragua, Camaguey, Cuba, mostly taken in June by L. D. Christenson; three specimens from Cayamas, Santa Clara, Cuba, May and June, E. A. Schwarz; and two specimens from Santa Clara Prov., Cuba, June 16, 1932, F. de Zayas (collection of O. L. Cartwright). Further, a series of seven specimens from Puerto Plata, Dominican Republic, July 20, 1937, W. J. Clench, and two from Bahamas (Nassau and Arthurs Town), these latter in the collection of the Museum of Comparative Zoology, and two specimens from Andros Island, May–June 1917, W. M. Mann, in the collection of the American Museum of Natural History.

9. *ATAENIUS MIAMII* Cartwright

Ataenius miamii CARTWRIGHT, 1934, Can. Ent., vol. 66, p. 200.

Piceous, opaque, anterior margin of head shining castaneous, legs castaneous, anterior tarsi, antennae, and trophi paler. Anterior margin of head broadly rounded each side of the broad median emargination, narrowly impunctate, front moderately coarsely punctured at sides, the punctures tending to coalesce in short longitudinal channels, median portion rather sparsely punctured, vertex rather coarsely and very densely punctured. Pronotum with marginal setae inconspicuous, marginal groove complete, surface densely and rather evenly punctured, the punctures very coarse but not coalescent at sides, finer toward anterior part of disk. Elytral striae broad and deep, striae punctures coarse, intervals finely alutaceous, each subacutely carinate and bearing a row of setigerous punctures along its outer margin, setae very short. Lateral margin carinate, epipleura somewhat shining, finely sculptured. Pygidial carina with a moderately strong median cusp. Metasternum somewhat shining, finely sculptured laterally, median area coarsely and sparsely punctured, median groove abruptly terminated behind. Abdominal sternites coarsely but very shallowly punctured, basal transverse row

of pits on each sternite fine but distinct. Anterior femur with perimarginal groove, surface densely and finely punctured. Posterior femur with posterior marginal groove, surface sparsely and finely punctured; posterior tibia without accessory spine. Length: 3–3.7 mm.

Type and paratypes.—U.S.N.M. No. 50764.

Type locality.—Miami, Florida, U. S. A.

Material examined.—The type, two paratypes, and six other specimens, two each from St. Croix, St. Kitts, and Barbados. The Barbados specimens are in the collection of the British Museum.

This species is somewhat similar to *A. tenebrosus* Arrow but is distinguished immediately from that species by the oval shape of the hind body and by the setigerous punctures of the elytra.

10. *ATAENIUS TENEBROSUS* Arrow

? *Ataenius picipes* FLEUTIAUX and SALLÉ, 1889, Ann. Soc. Ent. France, ser. 6, vol. 9, p. 397.

Ataenius tenebrosus ARROW, 1903, Trans. Ent. Soc. London, p. 512.

Piceous, opaque, anterior margin of head shining castaneous, legs castaneous, antennae, tarsi, and trophi paler. Anterior margin of head broadly rounded each side of the broad and not deep median emargination, narrowly impunctate, front coarsely punctured, the punctures coalescing to form irregular longitudinal channels, vertex coarsely and densely set with discrete punctures. Pronotum with marginal setae inconspicuous, marginal groove entire, extreme margin somewhat explanate. Surface dull, densely punctured, the punctures laterally very coarse and cribrate, those on anterior portion of disk finer and distinctly separated. Elytral striae deep, strial punctures coarse, intervals not strongly convex, surface coarsely alutaceous, almost scaly, without visible punctures. Humeral angle unusually sharply produced. Lateral margin carinate, epipleura dull. Pygidial carina with strong median cusp. Metasternum somewhat shining at middle, lateral areas finely and densely sculptured, median area coarsely and sparsely punctured, median groove abruptly terminated both anteriorly and posteriorly. Abdominal sternites coarsely and rather sparsely punctured, basal transverse row of pits on each sternite well defined. Anterior femur with deep perimarginal groove, surface coarsely and densely sculptured. Posterior femur with posterior marginal groove entire, surface shining, sparsely and finely punctured; posterior tibia without accessory spine. Length: 3.7–4.5 mm.

Type.—In the British Museum.

Type locality.—Grenada, British West Indies (here restricted).

Material examined.—Six specimens from Hispaniola, 14 specimens from Puerto Rico, two specimens from Vieques Island, and a single specimen from Trinidad, the last received for study from the British Museum by kindness of Mr. Arrow.

It is possible that *A. tenebrosus* Arrow is a synonym of *A. picipes* Fleutiaux and Sallé, but because of the lack of authentic material of the latter I prefer to list the material before me under the younger but certain name.

11. ATAENIUS SUBOPACUS, new species

Piceous, very feebly shining, front of head, anterior margin of pronotum, and legs rather bright castaneous, antennae and trophi pale. Anterior margin of head bluntly angulate each side of the shallow median emargination, front finely, transversely rugulose, vertex highly polished, sparsely and not coarsely punctured, the punctures slightly more dense at sides. Pronotum with marginal setae fine and rather sparsely placed, especially across base, marginal groove entire, posterior angles almost effaced. Surface subopaque, densely and moderately coarsely punctured, the punctures only slightly sparser at anterior portion of disk. Elytral striae fine but rather deep, strial punctures not conspicuous, intervals almost flat, each set with two rows of closely set punctures adjacent to the striae. Each puncture bears a minute seta. Lateral margin rather blunt, epipleura opaque. Pygidial carina with fine and acute cusp, which is continued onto the pygidium as a fine longitudinal carina reaching two-thirds to apical margin. Metasternum somewhat shining, finely and densely sculptured on extreme lateral area, median area somewhat deepened along groove, sparsely and rather coarsely punctured, median groove deep, abruptly terminated anteriorly. Abdominal sternites coarsely punctured, densely at sides, sparsely along median line, basal transverse row of pits on each sternite fine and distinct. Anterior femur with perimarginal groove, surface coarsely, evenly, and moderately densely punctured. Posterior femur without marginal groove, shining, sparsely and finely punctured; posterior tibia without accessory spine. Length: 3.5–4 mm.

Type and paratypes.—U.S.N.M. No. 53323.

Type locality.—Grenada, British West Indies.

Material examined.—Type (male) and one paratype from 3 miles west of Grand Anse, January 20, 1936 (station 150); one paratype from 2 miles west of Grand Anse, January 13, 1936 (station 131); one paratype from 1 mile northeast of Grenville, January 21, 1936 (station 151), all collected by Dr. R. E. Blackwelder. There is also a single specimen of this species from Carriacou of the Grenadines, near Limlair, January 17, 1936 (Blackwelder station 144).

12. *ATAENIUS GRACILIS* (Melsheimer)

Oxyomus (Pleurophorus) gracilis MELSHEIMER, 1844, Proc. Acad. Nat. Sci. Philadelphia, new ser., vol. 2, p. 137.

Psammodius gracilis DU VAL, 1857, in de la Sagra, Historia física, política y natural de la isla de Cuba, vol. 7, p. 119.

Atacnius gracilis GEMMINGER and HAROLD, 1869, Catalogus coleopterorum, vol. 4, p. 1066.—HORN, 1871, Trans. Amer. Ent. Soc., vol. 3, p. 286; 1887, loc. cit., vol. 14, p. 79.—BATES, 1887, Biologia Centrali-Americana, Coleoptera, vol. 2, pt. 2, p. 99.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 436.

Aphodius chilensis SOLIER, 1851, in Gay, Historia física y política de Chile, Zool., vol. 5, p. 72, pt. 16, fig. 1 (teste Schmidt, 1922).

Piceous-black, somewhat shining, legs castaneous, antennae and trophi pale. Anterior margin of head broadly rounded each side of the very shallow median emargination, front rather coarsely and densely punctured, the punctures tending to form longitudinal rows on upper part and becoming finer and sparser near margin, vertex coarsely and cribrately punctured. Pronotum with marginal setae apparently absent, marginal groove entire, and with a short shallow median longitudinal groove at base. Surface rather coarsely, evenly but not densely punctured, the punctures finer toward anterior margin. Elytral striae moderate, strial punctures large, intervals convex, the first (sutural) interval with a close set series of rather coarse punctures, other intervals more finely and less regularly punctured. Lateral margin subcarinate, epipleura somewhat shining. Pygidial carina with a feeble median cusp, extreme apical portion tumid, surface subopaque. Metasternum with median portion shining, median groove broad and deep, not abruptly terminated anteriorly, each side along base with a deep, oblique antecoxal groove, surface coarsely and sparsely punctured. Abdominal sternites with punctation similar to that of metasternum, basal transverse rows of pits feebly defined. Anterior femur with perimarginal groove, surface sparsely and rather coarsely punctured, posterior femur with short groove on posterior margin near insertion of tibia, surface finely and very sparsely punctured; posterior tibia without accessory spine. Length: 3-3.5 mm.

Type.—Probably in Museum of Comparative Zoology.

Type locality.—Pennsylvania, U. S. A.

Material examined.—In addition to many hundred specimens from Pennsylvania and other localities on continental America, 151 specimens have been studied from the following islands: Cuba, Jamaica, Hispaniola, Puerto Rico, Vieques, St. Croix, St. Kitts, Barbados, and St. Vincent. Arrow, 1903, reports this species from Grenada also.

13. *ATAENIUS ELONGATUS* (Palisot)

Scarabaeus elongatus PALISOT DE BEAUVOIS, 1811, Insectes recueillis en Afrique et en Amérique ..., livr. 7, p. 104, pl. 3c, fig. 8.

Ataenius elongatus FLEUTIAUX and SALLÉ, 1889, Ann. Soc. Ent. France, ser. 6, vol. 9, p. 397 (probably erroneous determination of Guadeloupe specimens).

Piceous to black, extreme anterior margins of head and pronotum, legs, antennae, and trophi castaneous. Anterior margin of head rounded each side of median subangulate emargination, front strongly convex, almost gibbous at middle, very finely and rather densely punctured, vertex a little more coarsely punctured. Pronotum with marginal setae only at sides, marginal groove entire, extreme margin acute. Surface very finely alutaceous, evenly, densely, and uniformly punctured throughout. Elytral striae fine and deep, strial punctures absent, intervals feebly convex, finely alutaceous, very sparsely and minutely punctulate, the punctures tending to form two rows on each interval. Lateral margin subcarinate, epipleura shining but rather roughly sculptured. Pygidial carina with strong median cusp, apical margin thickened. Metasternum shining, median portion slightly elevated, finely and moderately densely punctured, median groove abruptly terminated anteriorly. Abdominal sternites minutely punctured, more coarsely so at sides, basal transverse row of pits on each sternite fine. Anterior femur with perimarginal groove, the surface sparsely and indefinitely punctured. Posterior femur without marginal groove, surface shining and minutely but sparsely punctulate; posterior tibia without accessory spine. Length: 5-5.7 mm.

Type.—Location unknown to the author.

Type locality.—Santo Domingo (Hispaniola).

Material examined.—In all, 43 specimens have been studied, all from Hispaniola. Localities represented are: Haiti—Port-au-Prince, San Michel, Bayeux; Dominican Republic—Santiago, San Francisco Mountains, Barahona, Monte Cristi, and Puerto Plata.

The record of this species from Guadeloupe seems to me doubtful, as Fleutiaux and Sallé comment specifically on the pronotal punctation of their specimens. These were possibly *A. darlingtoni* Hinton.

14. *ATAENIUS EDWARDSI*, new species

Piceous to black, anterior margins of head and pronotum and legs castaneous, antennae and trophi paler. Anterior margin of head broadly rounded each side of the moderately deep median emargination, front convex, in male finely and rather densely punctulate and finely transversely rugulose near margin; in female much more strongly rugulose nearly to vertex, vertex more coarsely and not densely punctate. Pronotum with marginal setae longer toward

anterior angles, shorter and sparser across base, marginal groove entire. Surface shining, set with punctures of two sizes: Fine punctures more or less evenly distributed over entire surface and coarse ones confined mainly to the lateral and basal areas. These in the female are even coarser than in the male. Elytral striae fine and deep, strial punctures as in *A. darlingtoni*, intervals moderately convex, finely, irregularly, and sparsely punctulate. Lateral margin subcarinate, epipleura shining, with a row of ill-defined punctures close to the outer edge. Pygidial carina with strong median cusp in male, a feeble one in female; further, the male is furnished with a cusp on apical margin opposite to the cusp on the carina, these cusps often connected by a very fine carina. Metasternum shining, median portion elevated and with a patch of setigerous punctures on posterior half, the setae short and inconspicuous, median groove abruptly terminated anteriorly. Abdominal sternites shining, minutely punctulate on median portion, sparsely but much more coarsely punctured laterally, basal transverse row of pits on each sternite fine. Anterior femur with fine perimarginal groove, the surface finely and sparsely punctured. Posterior femur without marginal groove, almost impunctate; posterior tibia without accessory spine. Length: 4-4.5 mm.

Type and paratypes.—U.S.N.M. No. 53324. Paratypes : Museum Comparative Zoology No. 23556.

Type locality.—Near Spanish Town, Jamaica, British West Indies.

Material examined.—Type and 15 paratypes from near Spanish Town, February 2 (station 377); two paratypes from Montego Bay, February 16 (station 407); one paratype each from Kingston, February 6 (station 391), and Black River, February 24 (station 416), all collected by Blackwelder and Chapin, 1937; two paratypes from Kingston, August 27-29, 1934, P. J. Darlington (in collection Museum of Comparative Zoology).

In addition to the type series 70 specimens have been studied from the following islands: Hispaniola, Puerto Rico, St. Croix, Antigua, Dominica, St. Lucia, Barbados, St. Vincent, Carriacou, and Grenada.

Compared with a specimen of *liogaster* from Teapa, Tabasco, Mexico, H. H. Smith, received from the British Museum, the following differences are noted: There is a break in the even curve of the pronotal margin from middle of base to anterior angle in *liogaster*, not present in the West Indian species. In *liogaster* the apical portion (from carina to apex) of the pygidium is about twice as long as in the corresponding sex of *edwardsi*, and the cusps are very much reduced. The median portion of the metasternum of *liogaster* does not appear to carry setigerous punctures and the posterior femur has a distinct groove, similar to that of *A. darlingtoni*. Dedicated to W. H. Edwards, Government entomologist of Jamaica.

15. *ATAENIUS INSULICOLA*, new species

Piceous; head, anterior margin of pronotum, humeri, and underparts castaneous, antennae paler. Anterior margin of head broadly rounded each side of the moderate median emargination, front moderately convex, in male finely and rather sparsely punctured, finely and sparsely rugulose, in female almost the same but with the rugulosity a little stronger, vertex sparsely but slightly more coarsely punctate. Pronotum with marginal setae fine and regular, those across base very short and inconspicuous, marginal groove entire, posterior angles rounded but evident. Surface shining, set with a mixture of coarse and fine punctures, the coarse punctures absent from the anterior area of the disk. Punctuation similar in the sexes. Elytral striae deep, stria punctures rather coarse, intervals moderately convex, finely and irregularly punctulate. Lateral intervals more coarsely punctured and less shining. Lateral margin subcarinate, epipleura dull, rather coarsely sculptured. Pygidial carina with feeble median cusp. Metasternum shining, lateral portions smooth except for a small sculptured area near extreme lateral margin, median portion slightly concave, sparsely but not finely punctured, median groove deep, abruptly terminated anteriorly and posteriorly. Abdominal sternites coarsely sparsely punctured at sides, very sparsely punctured along median line, basal transverse row of pits on each sternite sharply defined. Anterior femur with perimarginal groove, surface rather coarsely punctured. Posterior femur without marginal groove, surface shining, sparsely and finely punctulate; posterior tibia without accessory spine. Length: 4-4.5 mm.

Type.—U.S.N.M. No. 53325.

Type locality.—St. Vincent, British West Indies.

Material examined.—The type (male) and 13 paratypes of both sexes from St. Vincent. Four specimens from Milepost 8½ on Windward Road, February 19, 1936 (station 181), and 10 from a point on the main road 3 miles southeast of Kingstown, February 23, 1936 (station 185), both lots collected by Dr. R. E. Blackwelder.

This species is similar in general appearance to *A. liogaster* Bates but is separated from that species by the less punctate metasternum and the absence of the marginal groove on the posterior femur.

16. *ATAENIUS CRIBRITHORAX* Bates

Atenius cribrithorax BATES, 1887, *Biologia Centrali-Americana*, Coleoptera, vol. 2, pt. 2, p. 95.

Piceous to black, head and pronotum with castaneous areas of indefinite extent, legs castaneous, antennae and trophi paler. Anterior margin of head broadly rounded each side of the shallow median

emargination, front moderately convex, in male rather finely and moderately densely punctured, finely and rather sparsely rugulose, in female the rugulosity tends to be coarser and to obscure the punctures, vertex more coarsely punctate. Pronotum with marginal setae inconspicuous, very short across base, slightly longer toward anterior angles, marginal groove entire, posterior angles not completely effaced. Surface shining, set with a mixture of fine and coarse punctures, the latter somewhat concentrated toward the sides. In the female the coarse punctures are even coarser than in the male, and in some specimens those near the anterior angles tend to coalesce. Elytral striae deep, striae punctures rather coarse, intervals moderately convex, finely and irregularly punctulate. Lateral margin subcarinate, epipleura shining, with traces of sculpture. Pygidial carina with a feeble cusp. Metasternum shining, lateral portions coarsely sculptured except for a narrow smooth area before each coxa, the median portion somewhat concave, sparsely and rather finely punctured, median groove deep, rather abruptly terminated anteriorly. Abdominal sternites coarsely but sparsely punctured, the punctures becoming more dense laterally, basal transverse row of pits on each sternite fine. Anterior femur with perimarginal groove, surface coarsely but sparsely punctured. Posterior femur with groove on posterior margin in apical half, surface finely and sparsely punctulate; posterior tibia with accessory spine. Length: 3.8–4 mm.

Type.—In the British Museum.

Type locality.—Mexico to Panama (not definitely restricted).

Material examined.—Two specimens from the type series received some years ago from the British Museum. Other specimens from Central America and 53 specimens from Jamaica and Cuba. There is also a specimen in the collection from St. Thomas, Virgin Islands, which I refer to this species with doubt.

17. *ATAENIUS LIOGASTER* Bates

Ataenius liogaster BATES, 1887, *Biologia Centrali-Americana*, Coleoptera, vol. 2, pt. 2, p. 94.—HINTON, 1937, *Ann. Mag. Nat. Hist.*, ser. 10, vol. 20, p. 193.

Piceous-black, anterior margin of head narrowly and legs castaneous, antennae and trophi pale. Anterior margin of head subangulately rounded each side of the very shallow median emargination, front only slightly convex, finely transversely rugulose anteriorly, very finely and sparsely punctured posteriorly. Vertex more coarsely and rather densely punctured. Pronotum with marginal setae fine, short, and inconspicuous across base, marginal groove entire, posterior angles almost obsolete. Surface shining, set with a mixture of minute and coarse punctures, the coarse punctures more sparsely placed and very

sparse on anterior portion of disk. Elytral striae fine and rather deep, strial punctures coarse and slightly off center, thus crenating the inner edge of each interval, intervals slightly convex and minutely alutaceous, sparsely and irregularly punctulate. Lateral margin subcarinate, epipleura shining. Pygidial carina with feeble median cusp. Metasternum shining, lateral portions finely sculptured near extreme lateral margin, median portion sparsely but not very finely punctured, median groove deep, not abruptly terminated either anteriorly or posteriorly. Abdominal sternites rather coarsely and closely punctured at sides, more sparsely so along median line, basal transverse row of pits on each sternite fine. Anterior femur with perimarginal groove, surface shining, sparsely and finely punctured with a very few very coarse punctures near posterior margin. Posterior femur with groove on posterior margin in apical half, surface very finely and sparsely punctulate; posterior tibia with accessory spine. Length: 4-4.3 mm.

Type.—In the British Museum.

Type locality.—Mexico.

Material examined.—A specimen from Teapa, State of Tabasco, Mexico, determined by Bates and received from the Biologia Centrali-Americana material; a specimen from Habana, Cuba, T. Barbour (in collection of Museum of Comparative Zoology); and a specimen from Grand Terre, Guadeloupe, November 14, 1935 (Blackwelder station 86).

The specimens recorded from Haiti and Santo Domingo by Hinton, 1937, and now in the U. S. National Museum appear to belong to *A. insulicola* rather than this species.

18. *ATAENIUS DARLINGTONI* Hinton

Ataenius darlingtoni HINTON, 1937, Ann. Mag. Nat. Hist., ser. 10, vol. 20, p. 179, figs. 6-9.

Piceous to black, extreme anterior margins of head and pronotum and legs castaneous, antennae and trophi paler. Anterior margin of head rounded each side of rather deep median emargination, front rather strongly convex, very finely and transversely rugulose with fine punctures replacing the rugulosities near vertex, vertex more coarsely punctured. Pronotum with marginal setae long at sides, short and sparse across base, marginal groove entire. Surface shining, not densely set with punctures of two sizes, fine ones more or less evenly distributed over the entire surface and coarse ones largely concentrated toward the sides. Elytral striae moderately sharp and deep, strial punctures coarse, placed slightly off center in stria so that they tend to encroach on the neighboring interval, intervals feebly convex, shining, very irregularly and finely punctulate. Lateral margin subcarinate, epipleura shining, irregularly and

sparsely sculptured. Pygidial carina with strong median cusp. Metasternum shining, median portion slightly raised, sparsely and very finely punctulate, median groove abruptly terminated both anteriorly and posteriorly. Abdominal sternites coarsely and rather densely punctured at sides, almost free of punctures along middle line of body, basal transverse row of pits on each sternite moderately coarse. Anterior femur with perimarginal groove, surface finely and sparsely punctulate, with a small cluster of coarse punctures near posterior margin near apex. Posterior femur with short groove along posterior margin in apical half, surface sparsely and finely punctulate with a small cluster of coarse punctures near apex; posterior tibia with accessory spine. Length: 4.7–5.5 mm.

Type.—In collection of H. E. Hinton. Paratypes: U.S.N.M. No. 52659.

Type locality.—Puerto Rico: Caratanga [=Cartagena] Lagoon.

Material examined.—Seventy specimens including seven paratypes. The following islands are represented by specimens: Cuba, Jamaica, Hispaniola, Puerto Rico, St. Croix, Antigua, Guadeloupe, and Grenada.

19. *ATAENIUS STRIGICAUDA* Bates

Ataenius strigicauda BATES, 1887, *Biologia Centrali-Americana*, Coleoptera, vol. 2, pt. 2, p. 96, pl. 6, fig. 24.—ARROW, 1903, *Trans. Ent. Soc. London*, p. 511.—FALL, 1930, *Journ. New York Ent. Soc.*, vol. 38, p. 98 (sub *floridanus* Brown).

Piceous-black, moderately shining, legs deep castaneous, antennae and trophi paler. Anterior margin of head broadly rounded on each side of the shallow median emargination. Front very finely, transversely strigillose, upper part (up to line connecting anterior margin of eyes) finely and rather densely punctured, vertex (beyond eye line) much more coarsely punctured. On occasional specimens some coarse punctures are found anterior to this line. Pronotum with marginal setae regularly set along sides and across base, marginal groove complete, a little widened toward anterior angles. Surface nearly smooth to very finely alutaceous and with punctures of two sizes: coarse punctures very densely placed laterally becoming very sparse on disk and fine punctures more or less evenly distributed between the coarser punctures over the entire surface. Elytral striae rather deep and fine, with strong indications of striae punctures, intervals sub-convex, becoming more acute near apex, surface nearly smooth to finely alutaceous and each interval with two moderately well defined rows of fine punctures except that the outer three intervals are more coarsely and irregularly sculptured. Lateral margin cariniform, subacute, epipleura rather shining. Pygidial carina with a feeble median cusp. Mesosternum strongly shagreened, intercoxal carina

broad and moderately long. Metasternum polished, very finely and very sparsely punctured, median groove not abruptly terminated anteriorly. On each side of median line and just behind the middle coxae there is a cluster of two or more very coarse punctures. Abdominal sternites coarsely punctured, the punctures somewhat finer and sparser at the middle. Transverse basal rows of pits quite poorly defined. Anterior femur beneath with deep perimarginal groove, the surface densely and rather coarsely punctured. Posterior femur with groove on hind margin reaching from tibial joint two-thirds (male) or half (female) distance to trochanter; posterior tibia with accessory spine. Length: 4.5-6 mm.

Type.—In the British Museum.

Type locality.—Cordoba, [Veracruz] Mexico (restricted here).

Material examined.—Eighty-four specimens from the West Indian Islands, in addition to many specimens from Florida, Mexico, Honduras, Panama, Canal Zone, Bolivia, and Argentina. Based on specimens before the writer the species is known to occur on the following islands: Cuba, Bahamas, Jamaica, Hispaniola, Puerto Rico, St. Croix, Guadeloupe, Dominica, St. Lucia, Barbados, St. Vincent, and Trinidad. Arrow (1903) reports it also from Grenada and Bequia Island.

The degree of alutaceousness of the elytral intervals and the strength of the punctures on the head appear to be variable without reference to geography. Further, each of the two characters varies without reference to the other. The small patch of coarse punctures on each side of the metasternum seems to be the surest differential to separate this species from the other large *Ataenius*.

20. *ATAENIUS FRATER* Arrow

Ataenius frater ARROW, 1903, Trans. Ent. Soc. London, p. 512.

Piceous-black, shining, appendages paler. Anterior margin of head strongly rounded on each side of the median emargination, front densely punctured, the punctures very fine toward the margin at middle, gradually becoming coarser posteriorly and laterally, vertex narrowly impunctate. Pronotum with marginal setae very short and inconspicuous, most evident just before the scutellum, submarginal groove narrow across base, widening toward anterior angles. Surface polished, punctures coarse and quite dense at sides, rather fine and sparse on disk. Elytral intervals flat, becoming subconvex apically. Basally the intervals are smooth and polished with fine and sparse punctures on disk and coarser and denser punctures laterally. Apically the polished portion of each interval becomes gradually narrower until at the extreme apex the intervals are strongly alutaceous with median rows of microscopic polished raised points.

The tenth interval (submarginal) is alutaceous throughout its length. The lateral margin is cariniform and very prominent; the epipleura alutaceous and complete. Pygidial carina with strong median cusp. Mesosternum strongly shagreened, clothed with short hair, with a short low carina between the coxae. Metasternum polished at middle, roughened by dense punctation at sides, median groove abruptly terminated before and behind, polished area sparsely and irregularly punctured. Abdominal sternites coarsely and closely punctured, with transverse basal rows of contiguous pits. Anterior femur beneath with deep perimarginal groove, anterior tibia tridentate, the basal tooth less acute than either of the others. Posterior femur with groove on hind margin, which is complete in male and which reaches from the tibial joint three-fourths of the distance to trochanter in female; posterior tibia with accessory spine. Length: 4-5 mm.

Type.—In the British Museum.

Type locality.—St. Vincent (south end), British West Indies.

Material examined.—Two hundred and thirty-four specimens from the West Indies have been studied. The species is widely distributed in the islands and eventually may be found on all islands. Specimens have actually been seen and studied from the following islands: Bahamas, Jamaica, Hispaniola, Puerto Rico, St. Thomas, Tortola, St. Croix, St. Kitts, Antigua, Montserrat, Guadeloupe, Dominica, Barbados, St. Vincent, Grenada, and Trinidad.

21. *ATAENIUS JAMAICENSIS*, new species

Dark castaneous to piceous, with vertex, pronotum except extreme margins, scutellum, and first to fifth and seventh elytral interspaces in part darker. Anterior margin of head subhemihexagonal, slightly depressed at middle, the angles rounded, front rather coarsely asperate, the asperities tending to form transverse ridges at middle, interocular area finely and not densely punctured, vertex polished, without visible punctures. Pronotum with marginal setae becoming very short across base, marginal groove narrow before the scutellum and progressively widening to its termination at the anterior angles. Surface polished at disk, with a fine scalelike ground sculpture at sides, rather coarsely and densely punctured, the punctures finer and sparser along median line which is sometimes devoid of punctures. Scutellum and elytra with scalelike ground sculpture, the former devoid of punctures, the latter with a coarse seriate punctation. Intervals somewhat convex, with a few scattered fine punctures, each of which bears a minute seta. Epipleura entire to apices of elytra, coarsely and irregularly wrinkled. Transverse carina of pygidium with triangular median cusp, margin polished, area bounded by margins and transverse carina with very

dense and fine scalelike sculpture. Mesosternum strongly shagreened, with dense vestiture of short hairs. Metasternum at middle polished, distinctly punctured, with a deep narrow median groove which ends abruptly both anteriorly and posteriorly, the area adjacent to the middle coxae shagreened and hairy, posteriorly and adjacent to hind coxae, very sparsely punctured and with a scalelike ground sculpture. Abdominal sternites coarsely and sparsely punctured, each with a transverse row of coarse contiguous pits in basal portion. Anterior femur beneath with deep perimarginal groove, anterior tibia with three subequal acute teeth. Posterior femur without groove on hind margin; posterior tibia with accessory spine. Length: 4 mm.

Type and paratypes.—U.S.N.M. No. 53326.

Type locality.—Black River, Jamaica.

Material examined.—Twenty-five specimens from Jamaica as follows: 17 specimens from type locality, February 24, 1937 (Chapin and Blackwelder station 377); one specimen from Spanish Town, February 2, 1937 (Chapin and Blackwelder station 420); three specimens from near Gutters, February 25, 1937 (Chapin and Blackwelder station 422); four specimens from near May Pen, February 26, 1937 (Chapin and Blackwelder station 425).

This species and *Ataenius nigrolineatus* Hinton from Panama are, so far as the writer knows, the only described species of the genus in which the elytra are distinctly vittate. *A. nigrolineatus* is a much more robust species and, further, is separated from *A. jamaicensis* by the uniform dense punctation of the pronotum and by the very smooth front of the head.

22. ATAENIUS ACICULUS Hinton

Ataenius aciculus HINTON, 1937, Ann. Mag. Nat. Hist., ser. 10, vol. 20, p. 187.

Light piceous, head, flanks of pronotum, and elytra and legs reddish brown, antennae and trophi paler. Anterior margin of head subangulate each side of the rather deep and broad median emargination, genal lobes angulate and prominent. Front very finely punctured on upper part, finely and transversely rugulose below, vertex coarsely and not densely punctured. Pronotum with marginal setae rather long and conspicuous, marginal groove fine across base, becoming feeble toward anterior angles. Surface feebly shining, disk with a few coarse punctures interspersed among the very fine punctures, laterally the coarse punctures become dense and subconfluent. Elytral striae fine and deep, strial punctures moderately coarse, intervals evenly convex, strongly alutaceous, sparsely, irregularly and rather finely punctured. Lateral margin blunt, epipleura opaque, irregularly sculptured. Apical declivity and flanks sparsely set with moderately long setae. Pygidial carina with a strong median cusp.

Metasternum opaque and finely sculptured at sides, shining and very coarsely punctured on median area, median groove moderately deep, abruptly terminated anteriorly. Abdominal sternites sparsely and rather finely punctured, basal transverse rows of pits poorly defined. Anterior femur with deep perimarginal groove, surface coarsely and densely punctured. Middle femur with posterior marginal groove. Posterior femur without marginal groove, surface shining, coarsely and sparsely punctured, the punctures almost entirely in apical half; posterior tibia with accessory spine. Length: 3.7 mm. (given as 4 mm. by Hinton).

Type.—U.S.N.M. No. 53327.

Type locality.—Diquini, Haiti.

Material examined.—A single specimen, the type, which was collected at the above locality by J. B. Torres.

A species notable for the fact that the middle and hind femora are quite different. It is the rule in *Ataenius* that these femora are similar.

23. *ATAENIUS VERSICOLOR* Schmidt

Ataenius versicolor SCHMIDT, 1916, Arch. Naturg., vol. S2A, Heft 1, p. 105.—

HINTON, 1937, Ann. Mag. Nat. Hist., ser. 10, vol. 20, p. 183 (part).

Ataenius haitianus HINTON, 1937, loc. cit. p. 184.

Piceous, sides of pronotum, outer intervals and apical third of elytra, antennae, and trophi pale reddish to yellowish brown, somewhat shining. Anterior margin of head broadly rounded each side of the moderately deep median emargination, front finely and irregularly rugulose with numerous fine punctures intermingled, vertex much more coarsely and rather densely punctured. Pronotum with marginal row of setae complete, the setae near the anterior angles longer, marginal groove complete and coarse. Surface closely and at sides cribrately punctured, the punctures of two sizes—very coarse, which are quite sparse on disk, and moderately fine, which are evenly though rather sparsely distributed over the entire pronotum except where the coarse punctures coalesce. Elytral striae deep, strial punctures moderately coarse, intervals convex but not at all carinate, each interval with two or three irregular rows of minute punctures, apical portions of all intervals and entire outer two intervals with fine setae, surface not strongly alutaceous. Lateral margin subcarinate, setose, epipleura somewhat shining. Pygidial carina with strong median cusp. Mesosternum finely sculptured, metasternum shining, laterally with a small patch of punctures near the epimeron, median portion flattened, finely and rather sparsely punctured, median groove deep, abruptly terminated anteriorly and posteriorly. Abdominal sternites coarsely and rather densely punctured, transverse basal row of pits on last sternite coarse and deep. Anterior

femur with perimarginal groove, surface very coarsely and densely punctured. Posterior femur slender, shining, sparsely and finely punctured, without marginal groove; posterior tibia without accessory spine. Length: 3.5–4.2 mm.

Type.—Of *versicolor* in collection Schmidt; of *haitianus*, U.S.N.M. No. 53892.

Type locality.—Haiti, Hispaniola.

Material examined.—Eighteen specimens from Haiti, six from Dominican Republic, and one from Point Cangrejos, Puerto Rico, April 6, 1920, G. N. Wolcott. There is an additional specimen from 15 miles northeast of Port-au-Prince, Haiti, August 26, 1935 (Blackwelder station 30) that appears to be an abnormal individual of this species. It is but 3.2 mm. in length and is less densely punctured than usual.

24. *ATAENIUS LUTEOMARGO*, new species

Aphodius marginellus CHEVROLAT, 1864, Ann. Soc. Ent. France, ser. 4, vol. 4, p. 414 (not Fabricius).

Ataenius terminalis ARROW, 1903, Trans. Ent. Soc. London, p. 512 (not Chevrolat).

Ataenius versicolor HINTON, 1937, Ann. Mag. Nat. Hist., ser. 10, vol. 20, p. 183. (Hinton's specimens from Dominica and Jamaica now in U. S. National Museum, not Schmidt).

Piceous, margins of head and pronotum indefinitely paler, outer two intervals and apices of elytra yellowish to brownish yellow, pygidium and tibiae castaneous, antennae and trophi paler. Anterior margin broadly rounded (subangulate in fresh specimens) on each side of the very shallow median emargination, front minutely punctulate, otherwise smooth in male or finely transversely rugulose in female, vertex anteriorly with a narrow band of coarse punctures extending between eyes, posteriorly impunctate and shining. Pronotum with marginal setae sparse and irregularly placed, marginal groove complete but fine across base. Surface very finely alutaceous, in male minutely and rather sparsely punctulate with sparse coarse punctures laterally and across the base, in female, similar but with coarse punctures more densely placed. Elytral striae very fine, stria punctures hardly visible, intervals feebly convex, each interval rather strongly alutaceous and set with two rows of very fine punctures. Lateral margin carinate except at apex where it is bluntly rounded. The upper face of the carina carries a series of coarse punctures. Epipleura shining. Pygidial carina with strong median cusp, pygidial apex thickened. Mesosternum finely sculptured, strongly pubescent, metasternum shining, minutely and sparsely punctulate, median groove abruptly terminated anteriorly, evanescent posteriorly. Abdominal sternites coarsely but indefinitely

punctured laterally, first sternite rather densely pubescent. Sternites separated by rows of fine impressed pits. Anterior femur with perimarginal groove, its surface sparsely but rather coarsely punctured. Posterior femur without marginal groove, surface almost impunctate; posterior tibia without accessory spine. Length: 4–4.5 mm.

Type.—U.S.N.M. No. 53328.

Type locality.—Dominica, British West Indies.

Material examined.—Type and 370 paratypes from Dominica, taken mostly near Roseau, whence the type comes. Besides the type series the writer has examined 1,714 specimens from the following islands: Jamaica, Hispaniola, Puerto Rico, St. Kitts, Antigua, Montserrat, Guadeloupe, St. Lucia, Barbados, and Grenada. The absence of this species from St. Vincent has already been commented on by Arrow (sub *terminalis*). On the islands where it occurs it appears to be by far the most common *Ataenius*.

25. *ATAENIUS SULCATULUS* (Chevrolat)

Auperia sulcatula CHEVROLAT, 1864, Ann. Soc. Ent. France, ser. 4, vol. 4, p. 413.

Ataenius sulcatulus GEMMINGER and HAROLD, 1869, Catalogus coleopterorum, vol. 4, p. 1067.

? *Auperia rhyticephala* CHEVROLAT, 1864, loc. cit., p. 413.

Piceous to black, pronotum sometimes pale near anterior angles as are the antennae and tarsi. Anterior margin of head broadly rounded each side of broad and shallow median emargination, head notably wide across genae and not strongly convex, front in male very finely and not at all densely punctured, in female finely transversely rugulose, vertex somewhat more coarsely punctured on area between eyes. Pronotum with rather long and conspicuous marginal setae, marginal groove rather coarse at sides, fine but complete across base. Surface in male very finely and sparsely punctulate, in female more coarsely so, laterally and across base with a very few scattered coarse punctures. Elytral striae deep, strial punctures fine and not conspicuous, intervals convex and smooth, minutely alutaceous, without visible punctation. Lateral margin subacutely carinate, epipleura somewhat shining. Pygidial carina with a strong median cusp; extreme apical margin with median cusp, the two cusps sometimes connected by a very fine carina. Mesosternum rough, metasternum smooth, median portion slightly elevated, in male punctate with short bristlelike setae arising from the punctures, in female similar but without setae, median groove deep but not abruptly terminated. Abdominal sternites impunctate but strongly alutaceous, basal transverse rows of pits not conspicuous. Anterior femur with a very fine perimarginal groove, the surface shining and free of punctures. Posterior femur without marginal groove, also shining and free of punctures; posterior tibia without accessory spine. Length: 3.5–4.5 mm.

Type.—Location unknown to writer.

Type locality.—Cuba.

Material examined.—Thirty-six males and 22 females from Baragua, Bahia Honda, Santiago de las Vegas, and Cayamas, Cuba. Most of the specimens (34 males and 20 females) were collected at Baragua, May 1932, by L. D. Christenson at the laboratory of the Cuban Sugar Club, and I feel that there is no question of the association of the sexes. It is probable that a female of this species served as type of *Auperia rhyticephala* Chevrolat, but the fact is not established.

26. *ATAENIUS TERMINALIS* (Chevrolat)

Auperia terminalis CHEVROLAT, 1864, Ann. Soc. Ent. France, ser. 4, vol. 4, p. 414.
Ataenius terminalis GEMMINGER and HAROLD, 1869, Catalogus coleopterorum, vol. 4, p. 1067.—SCHMIDT, 1922, Das Tierreich, pars 45, Aphodiinae, p. 438.
A[uparia] ciliata CHEVROLAT, 1864, loc. cit., p. 414.

Piceous, apex and sides of elytra in apical half, tibiae, tarsi, antennae, and trophi paler (entirely castaneous in *A. ciliata* Chevrolat). Anterior margin of head broadly rounded each side of the very shallow median emargination, front finely and rather sparsely punctulate, otherwise smooth in male, distinctly transversely rugulose in female, vertex more coarsely punctured and more shining. Pronotum with row of marginal setae broken for a short distance each side of scutellum, marginal groove complete but rather fine across base. Surface finely alutaceous, with a mixture of coarse and fine punctures, the coarse punctures rather sparse in male, much more evident in female. Elytral striae fine but sharply defined, striae punctures fine, close set, intervals very feebly convex, almost flat, each interval rather strongly alutaceous without visible punctures except under high magnification. Lateral margin subcarinate in basal half, rounded toward apex, epipleura shining, with single row of fine punctures in apical third. Pygidial carina with a sharp median cusp, pygidial apex thickened. Mesosternum finely sculptured, pubescent, metasternum shining, its median area sparsely and finely punctured, median groove poorly defined posteriorly but abruptly terminated anteriorly. Abdominal sternites sparsely and indistinctly punctured, especially so in male, first sternite finely and rather densely pubescent. Sternites separated by fine transverse grooves which replace the usual row of pits. Anterior femur without marginal groove, surface very sparsely punctured. Posterior femur very minutely and sparsely punctured, without marginal groove; posterior tibia without accessory spine. Length: 3.6–4 mm.

Type.—Probably in collection of Felsche.

Type locality.—Cuba.

Material examined.—Three hundred and eighty specimens, of which 367 are from various localities on Cuba and 13 from localities on the western half of Jamaica. No specimens have been seen from any other of the West Indian Islands or from the mainland. References to this species in the literature from localities other than Cuba and Jamaica probably refer to *A. luteomargo*.

Except for the difference in coloration, there seems no means of separating the castaneous specimens from the darker ones, and because there are so many intergrading specimens in any large series it has seemed best to list *A. ciliata* (Chevrolat) as a synonym.

27. *ATAENIUS BREVINOTUS*, new species

Dark castaneous, head, sides of pronotum, humeri, and legs light castaneous, antennae and trophi paler. Anterior margin of head broadly rounded each side of the median reflexed emargination, genal lobes rounded. Front and vertex finely and moderately densely punctured, the punctures becoming finer toward the margin. Pronotum strongly transverse, anterior angles broadly rounded and somewhat produced anteriorly, posterior angles strongly indicated, obtuse, marginal setae absent, marginal groove obsolete, feebly indicated across base. Surface very coarsely and rather densely punctured at sides, the punctures becoming finer and sparser on disk where they are of two sizes. Elytral striae fine and sharply defined, strial punctures distinct but not conspicuous, intervals almost flat, minutely alutaceous, set with a few very fine punctures. Lateral margin subacute, epipleura irregularly rugose. Humeral angle raised in a sharp vertical carina. Pygidial carina with an acute median cusp which is prolonged to the apex of the sclerite in a fine carina. Metasternum rough laterally, median area polished, finely and sparsely punctured, median groove shallow, ending anteriorly and posteriorly in pits. Abdominal sternites smooth at middle, roughly punctured at sides, basal transverse rows of pits poorly defined. Anterior femur not quite twice as long as broad, almost rectangular, marginal groove very fine but entire, surface finely and densely sculptured. Posterior femur very slender, posterior marginal groove entire, surface sparsely and moderately finely punctured. Length: 5 mm.

Type.—Museum of Comparative Zoology No. 23554.

Type locality.—Baragua, Cuba.

Material examined.—A single specimen collected May 7, 1926, at light by C. F. Stahl (T.P.R.F. Ent. No. 457).

This most interesting species is apparently an intermediate between the typical *Ataenius* and typical *Eupariæia*. In habitus and in the short pronotum, broad anterior femur, and slender posterior femur, the species bears a striking resemblance to *E. costaricensis* Hinton.

But in the structure of the mesosternum and mesocoxae, which points seem to be the most trenchant in separating *Euparixia* from *Ataenius*, it is a typical *Ataenius*.

Genus EUPARIXIA Brown, 1927

Euparixia BROWN, 1927, Can. Ent., vol. 59, p. 288.—HINTON, 1934, Pan-Pac. Ent., vol. 10, p. 27; 1936, Univ. California Publ. Ent., vol. 6, p. 274.

Type of genus: *Euparixia duncani* Brown, 1927 (by monotypy).

This genus was established to contain species of Aphodiinae having the prothorax strongly constricted at base, the middle coxa obliquely truncate at outer extremity where it is contiguous with or overlapped by the elytral margin, and the anterior femur unusually short and broad.

Since the publication of the original diagnosis, two species, *E. formica* and *E. costaricensis*, have been added by Hinton, and in this paper a fourth is described. One of these is known to be associated with ants of the genus *Atta*, and it is probable that such is the habit of all the species. At least it is noteworthy that the known range of *Euparixia* is included within the range of *Atta*.

1. EUPARIXIA BRUNERI, new species

Body uniformly castaneous, legs somewhat darker. Anterior margin of head truncate across middle, sides feebly curved to the prominent genal lobes. Front finely and rather densely punctured in upper portion, finely granulated near margin, central area smooth and slightly raised. Vertex coarsely and very densely punctured. Pronotum broader than long, without well-defined marginal groove, much narrower across base than width of elytra across humeri, posterior angles completely obliterated, greatest width at about anterior third, in front of which point the sides are broadly explanate, anterior angles prominent but broadly rounded. Surface in basal half very coarsely and rather densely pitted, anterior half across disk coarsely to finely punctate, explanate margins almost impunctate. Elytra together suboval, widest across apical third, basal ends of lateral cariniform margin ending in a prominent spur, scutellum elongate triangular, very narrow, striae shallow, strial punctures coarse and quadrate, intervals acutely carinate. Lateral margin acute, epipleura nearly smooth. Pygidial carina feeble with very weak median cusp. Metasternum mostly smooth, median area with a few coarse ill-defined punctures adjacent to middle coxae, median groove shallow. Abdominal sternites with a few very large, shallow, ill-defined pits, the pits of the basal transverse rows very large, quadrate and contiguous. Anterior femur short and very broad, anterior margin with broad groove, surface moderately coarsely and

closely punctured. Anterior trochanters triangular, very prominent. Posterior femur slender, with short posterior marginal groove in apical two-fifths, surface finely and rather sparsely punctured. Length: 4.5 mm.

Type and paratypes.—U.S.N.M. No. 53329.

Type locality.—Baragua, Camaguey, Cuba.

Material examined.—Three specimens from Cuba, two of which were taken at the type locality May 24, 1932, by L. D. Christenson, the third at Santiago de las Vegas, July 20, 1924, and submitted for study by S. C. Bruner.

This species bears a striking resemblance to *E. formica* Hinton but differs from that species as follows: The explanate margins of the pronotum end abruptly at the widest point and are not continued posteriorly in such a way as to be visible from above; the median portion of the metasternum is almost impunctate and not evenly and densely punctate; the posterior marginal groove of the posterior femur is definitely less than half as long as the femur instead of fully half its length.

ADDENDA

Since the preparation of the taxonomic portion of this paper was completed, a few descriptions of Cuban *Ataenius* by Dr. V. Balthasar¹ have come to my attention. It appears that Dr. Balthasar has not access to the recent literature dealing with this group and has perhaps redescribed certain already known species.

The species described by Dr. Balthasar are as follows:

Ataenius waltherhorni BALTHASAR, 1938, loc. cit., p. 55.

I find it impossible to separate this from *A. darlingtoni* Hinton, 1937, a species commonly found on Cuba and elsewhere.

Ataenius havanensis BALTHASAR, 1938, loc. cit., p. 56.

The species appears to me inseparable from *A. miamii* Cartwright, 1934. Up to the present I have not examined specimens of this species from Cuba but have established its distribution in the West Indies as sufficiently wide to make its presence on the island extremely probable. The Florida specimens are almost certainly recent arrivals from some West Indian island.

Ataenius frankenbergeri BALTHASAR, 1938, loc. cit., p. 56.

This is the species that I have here considered to be *A. sulcatulus* (Chevrolat). While the identification is not fully established, sufficient variation in the series from Baragua was noticed to make such an identification highly probable.

¹ Arbeit. Morph. und Taxon. Ent. Berlin-Dahlem, vol. 5, No. 1, pp. 55–61, 1938.